Apprenticeship and Industry Training

Recreation Vehicle Service Technician

Apprenticeship Course Outline

4515 (2015)

Alberta

Apprenticeship and Industry Training

INNOVATION AND ADVANCED EDUCATION CATALOGUING IN PUBLICATION DATA

Apprenticeship and Industry Training: Recreation Vehicle Service Technician Apprenticeship Course Outline

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Recreation Vehicle Service Technician
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Apprenticeship

Apprenticeship is post-secondary education with a difference. Apprenticeship begins with finding an employer. Employers hire apprentices, pay their wages and provide on-the-job training and work experience. Approximately 80 per cent of an apprentice's time is spent on the job under the supervision of a certified journeyperson or qualified tradesperson. The other 20 per cent involves technical training provided at, or through, a post-secondary institution – usually a college or technical institute.

To become certified journeypersons, apprentices must learn theory and skills, and they must pass examinations. Requirements for certification—including the content and delivery of technical training—are developed and updated by the Alberta Apprenticeship and Industry Training Board on the recommendation of the Recreation Vehicle Service Technician Provincial Apprenticeship Committee.

The graduate of the Recreation Vehicle Service Technician apprenticeship program is a certified journeyperson who will be able to:

- Apply standards and regulations relating to recreation vehicles
- Service Liquid Petroleum (LP) gas distribution systems and appliances
- Service plumbing and electrical systems
- Use tools and equipment
- Service exterior structural components, coverings and fixtures
- Service interior components and fixtures
- Service interior and exterior accessories.

Apprenticeship and Industry Training System

Industry-Driven

Alberta's apprenticeship and industry training system is an industry-driven system that ensures a highly skilled, internationally competitive workforce in more than 50 designated trades and occupations. This workforce supports the economic progress of Alberta and its competitive role in the global market. Industry (employers and employees) establishes training and certification standards and provides direction to the system through an industry committee network and the Alberta Apprenticeship and Industry Training Board. The Alberta government provides the legislative framework and administrative support for the apprenticeship and industry training system.

Alberta Apprenticeship and Industry Training Board

The Alberta Apprenticeship and Industry Training Board provides a leadership role in developing Alberta's highly skilled and trained workforce. The board's primary responsibility is to establish the standards and requirements for training and certification in programs under the Apprenticeship and Industry Training Act. The board also provides advice to the Minister of Advanced Education on the needs of Alberta's labour market for skilled and trained workers, and the designation of trades and occupations.

The thirteen-member board consists of a chair, eight members representing trades and four members representing other industries. There are equal numbers of employer and employee representatives.

Industry Committee Network

Alberta's apprenticeship and industry training system relies on a network of industry committees, including local and provincial apprenticeship committees in the designated trades, and occupational committees in the designated occupations. The network also includes other committees such as provisional committees that are established before the designation of a new trade or occupation comes into effect. All trade committees are composed of equal numbers of employer and employee representatives. The industry committee network is the foundation of Alberta's apprenticeship and industry training system.

Local Apprenticeship Committees (LAC)

Wherever there is activity in a trade, the board can set up a local apprenticeship committee. The board appoints equal numbers of employee and employer representatives for terms of up to three years. The committee appoints a member as presiding officer. Local apprenticeship committees:

- monitor apprenticeship programs and the progress of apprentices in their trade, at the local level
- make recommendations to their trade's provincial apprenticeship committee (PAC) about apprenticeship and certification in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- make recommendations to the board about the appointment of members to their trade's PAC
- help settle certain kinds of disagreements between apprentices and their employers
- carry out functions assigned by their trade's PAC or the board

Provincial Apprenticeship Committees (PAC)

The board establishes a provincial apprenticeship committee for each trade. It appoints an equal number of employer and employee representatives, and, on the PAC's recommendation, a presiding officer - each for a maximum of two terms of up to three years. Most PACs have nine members but can have as many as twenty-one. Provincial apprenticeship committees:

- Make recommendations to the board about:
    - standards and requirements for training and certification in their trade
    - courses and examinations in their trade
    - apprenticeship and certification
    - designation of trades and occupations
    - regulations and orders under the Apprenticeship and Industry Training Act
- monitor the activities of local apprenticeship committees in their trade
- determine whether training of various kinds is equivalent to training provided in an apprenticeship program in their trade
- promote apprenticeship programs and training and the pursuit of careers in their trade
- consult with other committees under the Apprenticeship and Industry Training Act about apprenticeship programs, training and certification and facilitate cooperation between different trades and occupations
- consult with organizations, associations and people who have an interest in their trade and with employers and employees in their trade
- may participate in resolving certain disagreements between employers and employees
- carry out functions assigned by the board

Recreation Vehicle Service Technician PAC Members at the Time of Publication

Mr. D. Gordon	Calgary	Presiding Officer
Mr. M. Murray	Spruce Grove	Employer
Mr. T. Ransom	Red Deer	Employer
Mr. R. Spencer	Balzac	Employer
Mr. M. Glessing	Edmonton	Employee
Mr. A. Hossack	Airdrie	Employee
Mr. B. Lenz	Stettler	Employee

Alberta Government

Alberta Advanced Education works with industry, employer and employee organizations and technical training providers to:

- facilitate industry's development and maintenance of training and certification standards
- provide registration and counselling services to apprentices and employers
- coordinate technical training in collaboration with training providers
- certify apprentices and others who meet industry standards

Technical Institutes and Colleges

The technical institutes and colleges are key participants in Alberta's apprenticeship and industry training system. They work with the board, industry committees and Alberta Advanced Education to enhance access and responsiveness to industry needs through the delivery of the technical training component of apprenticeship programs. They develop lesson plans from the course outlines established by industry and provide technical training to apprentices.

Apprenticeship Safety

Safe working procedures and conditions, incident/injury prevention, and the preservation of health are of primary importance in apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of government, employers, employees, apprentices and the public. Therefore, it is imperative that all parties are aware of circumstances that may lead to injury or harm.

Safe learning experiences and healthy environments can be created by controlling the variables and behaviours that may contribute to or cause an incident or injury. By practicing a safe and healthy attitude, everyone can enjoy the benefit of an incident and injury free environment.

Alberta Apprenticeship and Industry Training Board Safety Policy

The Alberta Apprenticeship and Industry Training Board (board) fully supports safe learning and working environments and emphasizes the importance of safety awareness and education throughout apprenticeship training- in both on-the- job training and technical training. The board also recognizes that safety awareness and education begins on the first day of on-the-job training and thereby is the initial and ongoing responsibility of the employer and the apprentice as required under workplace health and safety training. However the board encourages that safe workplace behaviour is modeled not only during on-the-job training but also during all aspects of technical training, in particular, shop or lab instruction. Therefore the board recognizes that safety awareness and training in apprenticeship technical training reinforces, but does not replace, employer safety training that is required under workplace health and safety legislation.

The board has established a policy with respect to safety awareness and training:

> **The board promotes and supports safe workplaces, which embody a culture of safety for all apprentices, employers and employees. Employer required safety training is the responsibility of the employer and the apprentice, as required under legislation other than the *Apprenticeship and Industry Training Act.***

The board's complete document on its 'Apprenticeship Safety Training Policy' is available at www.tradesecrets.alberta.ca; access the website and conduct a search for 'safety training policy'.

Implementation of the policy includes three common safety learning outcomes and objectives for all trade course outlines. These common learning outcomes ensure that each course outline utilizes common language consistent with workplace health and safety terminology. Under the title of 'Standard Workplace Safety', this first section of each trade course outline enables the delivery of generic safety training; technical training providers will provide trade specific examples related to the content delivery of course outline safety training.

Occupational Health and Safety

A tradesperson is often exposed to more hazards than any other person in the work force and therefore should be familiar with and apply the Occupational Health and Safety Act, Regulations and Code when dealing with personal safety and the special safety rules that apply to all daily tasks.

Occupational Health and Safety (a division of Alberta Human Services) conducts periodic inspections of workplaces to ensure that safety regulations for industry are being observed.

Additional information is available at www.humanservices.alberta.ca

Technical Training

Apprenticeship technical training is delivered by the technical institutes and many colleges in the public post-secondary system throughout Alberta. The colleges and institutes are committed to delivering the technical training component of Alberta apprenticeship programs in a safe, efficient and effective manner. All training providers place great emphasis on safe technical practices that complement safe workplace practices and help to develop a skilled, safe workforce.

The following institutions deliver Recreation Vehicle Service Technician apprenticeship technical training:

Southern Alberta Institute of Technology (Mayland Heights Campus)

Procedures for Recommending Revisions to the Course Outline

Advanced Education has prepared this course outline in partnership with the Recreation Vehicle Service Technician Provincial Apprenticeship Committee.

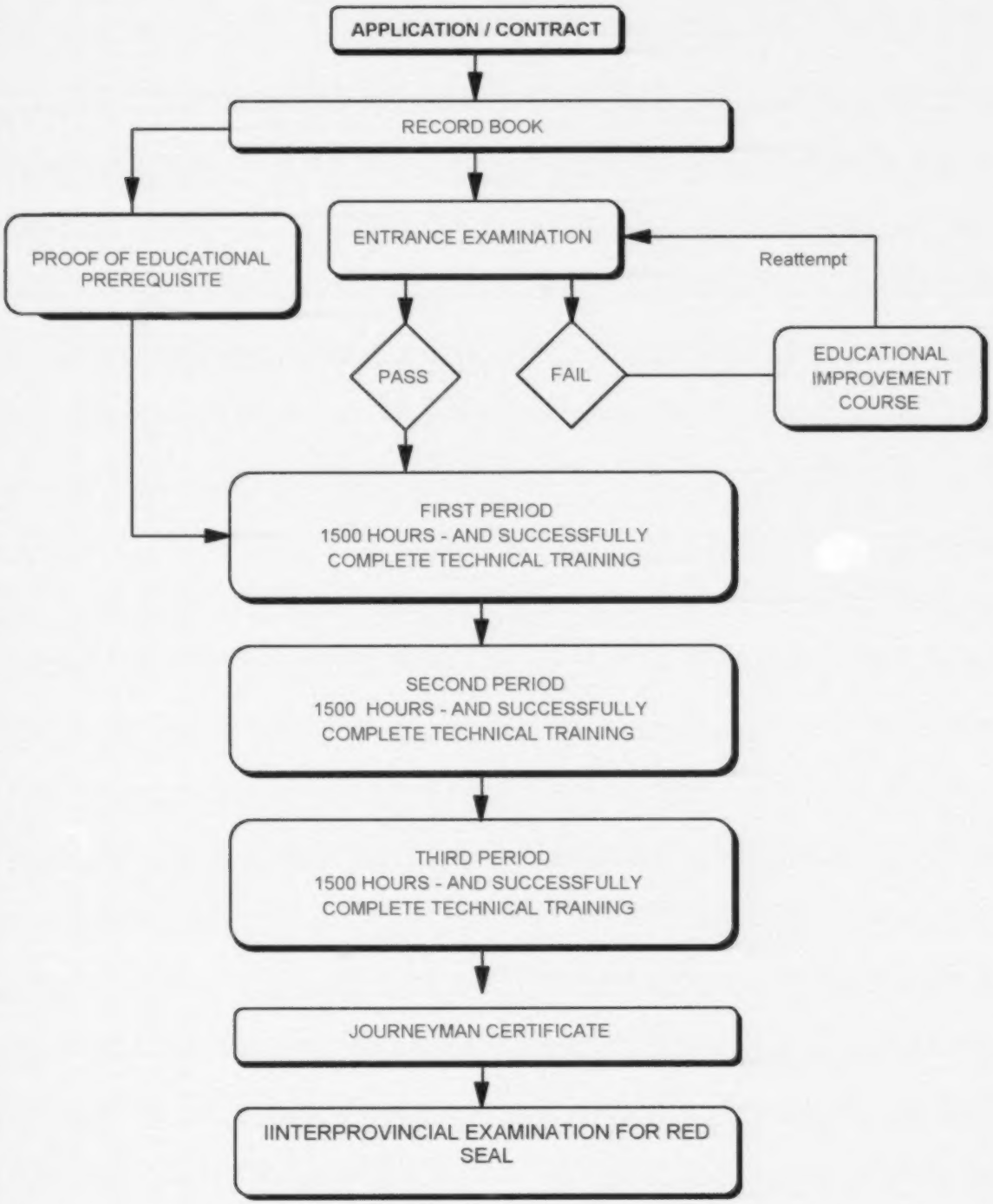
This course outline was approved on November 7, 2014 by the Alberta Apprenticeship and Industry Training Board on a recommendation from the Provincial Apprenticeship Committee. The valuable input provided by representatives of industry and the institutions that provide the technical training is acknowledged.

Any concerned individual or group in the province of Alberta may make recommendations for change by writing to:

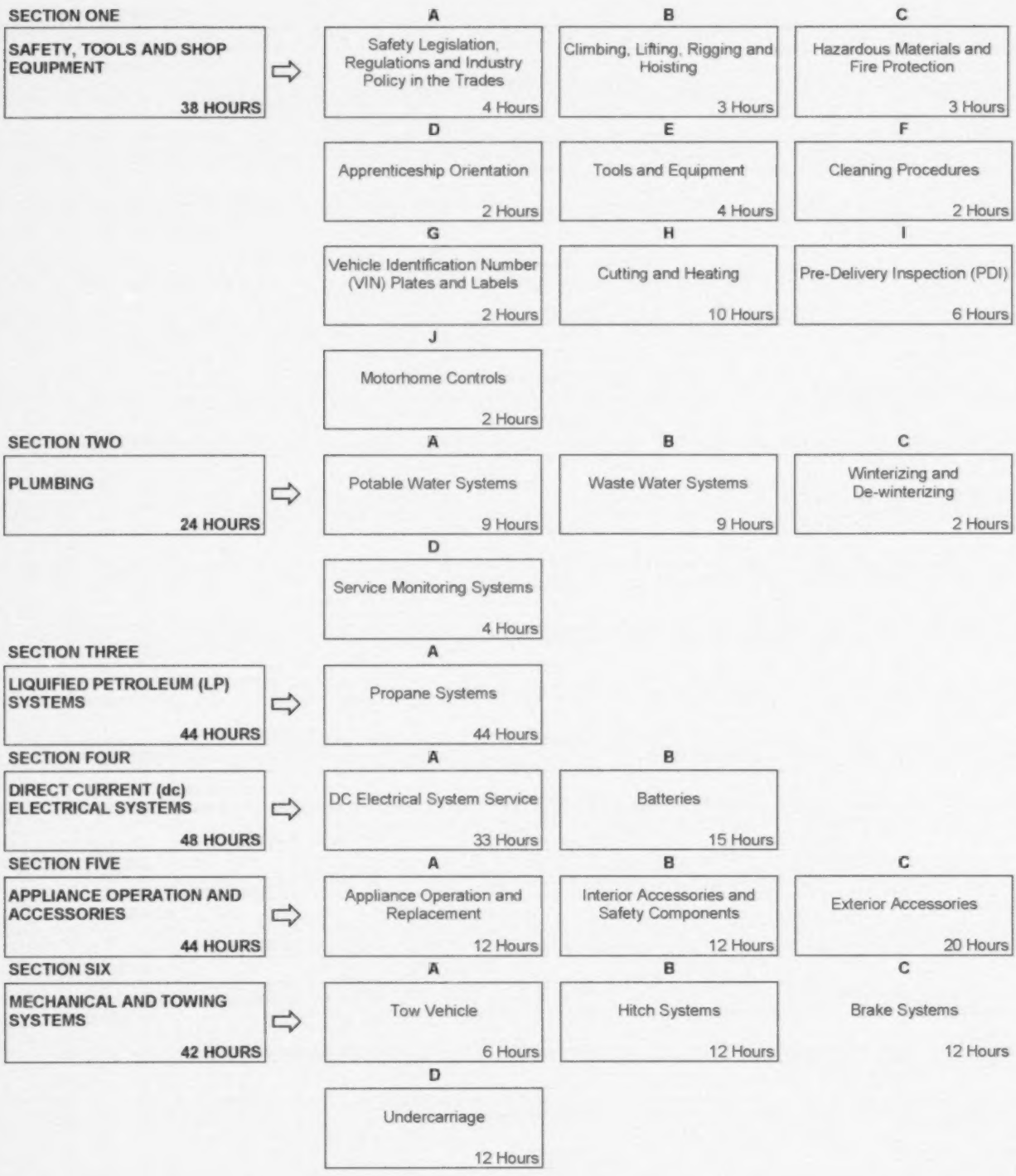
Recreation Vehicle Service Technician Provincial Apprenticeship Committee
c/o Industry Programs and Standards
Apprenticeship and Industry Training
Advanced Education
10th floor, Commerce Place
10155 102 Street NW
Edmonton AB T5J 4L5

It is requested that recommendations for change refer to specific areas and state references used. Recommendations for change will be placed on the agenda for regular meetings of the Recreation Vehicle Service Technician Provincial Apprenticeship Committee.

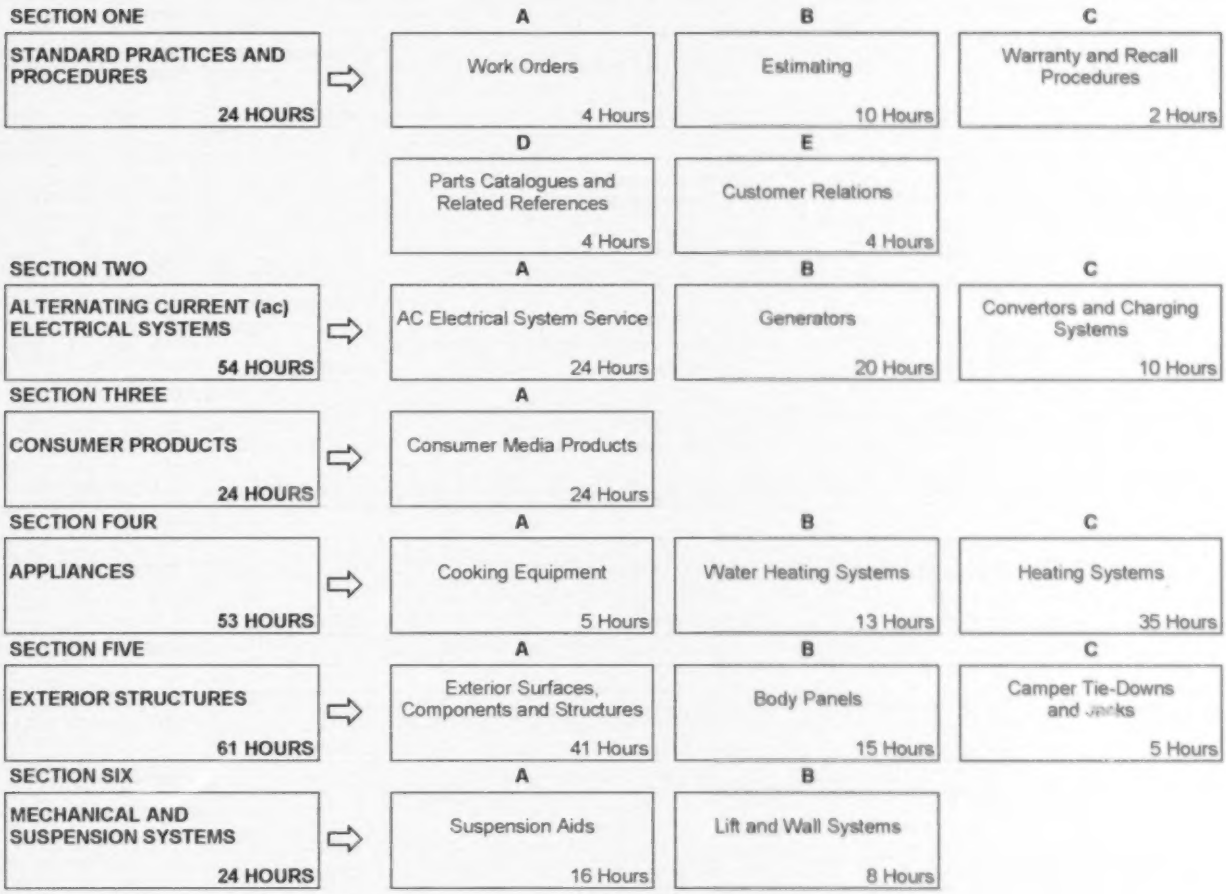
Apprenticeship Route toward Certification



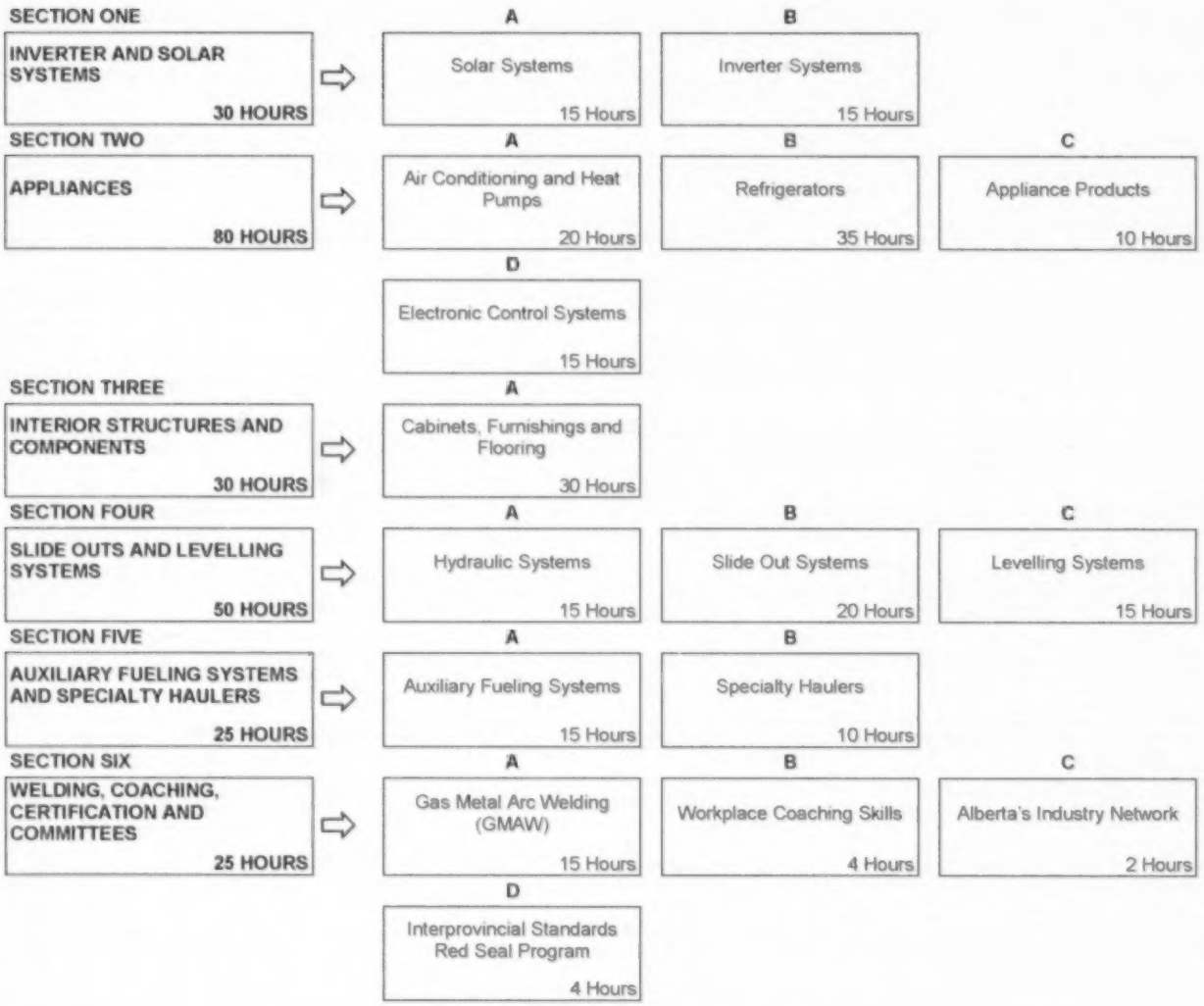
Recreation Vehicle Service Technician Training Profile
First Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)



Second Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)



Third Period
(8 Weeks 30 Hours per Week – Total of 240 Hours)



NOTE: The hours stated are for guidance and should be adhered to as closely as possible. However, adjustments must be made for rate of apprentice learning, statutory holidays, registration and examinations for the training establishment and Apprenticeship and Industry Training.

FIRST PERIOD TECHNICAL TRAINING
RECREATION VEHICLE SERVICE TECHNICIAN TRADE
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE: ..... SAFETY, TOOLS AND SHOP EQUIPMENT ..... 38 HOURS

A. Safety Legislation, Regulations and Industry Policy in the Trades .....4 Hours

Outcome: ***Describe legislation, regulations and practices intended to ensure a safe work place in this trade.***

1. Demonstrate the ability to apply the Occupational Health and Safety Act, Regulation and Code.
2. Explain the role of the employer and employee in regard to Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations, and related advisory bodies and agencies.
3. Explain industry practices for hazard assessment and control procedures.
4. Describe the responsibilities of workers and employers to apply emergency procedures.
5. Describe positive tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6. Describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE).
7. Select, use and maintain appropriate PPE for worksite applications.

B. Climbing, Lifting, Rigging and Hoisting ..... 3 Hours

Outcome: ***Describe the use of personal protective equipment (PPE) and safe practices for climbing, lifting, rigging and hoisting in this trade.***

1. Select, use and maintain specialized PPE for climbing, lifting and load moving equipment.
2. Describe manual lifting procedures using correct body mechanics.
3. Describe rigging hardware and the safety factor associated with each item.
4. Select the correct equipment for rigging typical loads.
5. Describe hoisting and load moving procedures.

C. Hazardous Materials and Fire Protection..... 3 Hours

Outcome: ***Describe the safety practices for hazardous materials and fire protection in this trade.***

1. Describe the roles, responsibilities features and practices related to the workplace hazardous materials information system (WHMIS) program.
2. Describe the three key elements of WHMIS.
3. Describe handling, storing and transporting procedures when dealing with hazardous material.
4. Describe safe venting procedures when working with hazardous materials.
5. Describe fire hazards, classes, procedures and equipment related to fire protection.

D. Apprenticeship Orientation.....2 Hours

Outcome: ***Apply training to become a journeyperson.***

1. Describe the recreation vehicle service technician apprenticeship in Alberta.
2. Describe the Apprenticeship responsibilities for the apprentice, employer, industry network and Alberta Apprenticeship and Industry Training.
3. Describe how remuneration is calculated for apprentices.
4. Describe resources for employees.
5. Describe employment opportunities for recreation vehicle service technicians.
6. Describe the purpose of the record book.

E. Tools and Equipment .....4 Hours

Outcome: ***Use tools and equipment.***

1. Describe the types and application of tools and equipment.
2. Describe the procedures for maintaining tools and equipment.
3. Maintain tools and equipment.
4. Use tools and equipment.

F. Cleaning Procedures .....2 Hours

Outcome: ***Clean recreation vehicles prior to servicing.***

1. Describe methods and products used for spot cleaning recreation vehicles.
2. Describe the hazards associated with cleaning products and procedures.

G. Vehicle Identification Number (VIN) Plates and Labels .....2 Hours

Outcome: ***Interpret information on VIN plates and labels.***

1. Describe the types and purpose of labels applicable to recreation vehicles.
2. Interpret information on VIN plates and labels.

H. Cutting and Heating.....10 Hours

Outcome: ***Perform cutting and heating operations.***

1. Describe cutting and heating operations permitted within the scope of this trade.
2. Describe the characteristics and handling of cutting and heating gases.
3. Describe the components of cutting and heating equipment.
4. Perform a leak check on cutting and heating equipment.
5. Describe the procedure for adjusting cutting and heating equipment.
6. Demonstrate the procedure for storing and maintaining cutting and heating equipment.
7. Perform cutting and heating operations.

FIRST PERIOD

I. **Pre-Delivery Inspection (PDI)** ..... **6 Hours**

Outcome: ***Perform pre-delivery inspections (PDI).***

1. Describe the purpose of a PDI.
2. Describe PDI procedures.
3. Describe the purpose of PDI documentation.
4. Describe PDI tasks specific to recreation vehicle designs.
5. Perform a PDI.

J. **Motorhome Controls** ..... **2 Hours**

Outcome: ***Operate motorhome specific controls.***

1. Describe the operation of motorhome control systems.
2. Describe the purpose of motorhome safety equipment.
3. Describe codes, regulations and liabilities relating to motorhomes.
4. Describe diesel engine start-up procedures.
5. Describe the operation of air brake systems.

SECTION TWO: ..... PLUMBING ..... 24 HOURS

A. **Potable Water Systems** ..... **9 Hours**

Outcome: ***Service potable water systems.***

1. Describe the components and operation of potable water systems.
2. Describe the procedure for installing and servicing potable water systems.
3. Identify codes for potable water systems.
4. Service potable water systems.

B. **Waste Water Systems** ..... **9 Hours**

Outcome: ***Service waste water systems.***

1. Describe the components and operation of waste water systems.
2. Describe the procedure for installing and servicing waste water systems.
3. Identify codes for waste water systems.
4. Service waste water systems.

C. **Winterizing and De-winterizing** ..... **2 Hours**

Outcome: ***Perform winterizing and de-winterizing of plumbing systems.***

1. Describe the types and applications of plumbing antifreeze.
2. Describe winterizing and de-winterizing procedures.

D. **Service Monitoring Systems** ..... **4 Hours**

Outcome: ***Service monitoring systems.***

1. Describe the components, principles of operation and owner procedures for monitoring systems.
2. Describe servicing of monitor panels and sensors.

SECTION THREE: .....LIQUIFIED PETROLEUM GAS (LP) SYSTEMS..... 44 HOURS

A. **Propane Systems** ..... **44 Hours**

Outcome: ***Service propane systems.***

1. Describe the properties of propane.
2. Describe safety procedures for working with propane.
3. Describe the types and applications of propane storage vessels.
4. Describe the requirements for inspecting, recertifying and filling propane storage vessels.
5. Describe the purpose of propane system components.
6. Describe the operation of propane system components.
7. Describe the operation of leak detectors.
8. Identify codes for propane systems.
9. Perform a leak and pressure test.
10. Perform operations to make connections in propane systems.
11. Adjust a propane regulator.

SECTION FOUR: ..... DIRECT CURRENT (dc) ELECTRICAL SYSTEMS ..... 48 HOURS

A. **DC Electrical Systems** ..... **33 Hours**

Outcome: ***Service direct current (dc) electrical systems.***

1. Describe electrical principles.
2. Describe the function and operation of dc circuits and circuit components.
3. Describe the use of schematics in servicing dc electrical systems.
4. Construct dc electrical circuits.
5. Identify codes for dc electrical systems.
6. Service dc components and circuits.

B. **Batteries** ..... **15 Hours**

Outcome: ***Perform battery servicing and boosting.***

1. Identify the types and application of batteries.
2. Describe the principles of battery operation.
3. Describe the procedure for storing and installing batteries.
4. Describe the procedure for testing, recharging and boosting batteries.
5. Identify the types of battery disconnect devices and systems.

SECTION FIVE: ..... APPLIANCES AND ACCESSORIES ..... 44 HOURS

A. Appliance Operation and Replacement ..... 12 Hours

Outcome: ***Perform replacement of appliances.***

1. Describe the general operation of RV appliances.
2. Describe the precautions and procedures for removing and installing RV appliances.

B. Interior Accessories and Safety Components ..... 12 Hours

Outcome: ***Service interior accessories and safety components.***

1. Describe the purpose of interior accessories and safety components.
2. Describe the operation of interior accessories and safety components.
3. Describe the procedure for installing and servicing interior accessories and safety components.

C. Exterior Accessories ..... 20 Hours

Outcome: ***Service exterior accessories.***

1. Describe the procedure for installing and servicing awnings.
2. Describe the procedure for installing and servicing screen rooms.
3. Describe the procedure for installing aftermarket/optional exterior accessories.
4. Describe the procedure for installing and servicing back-up alarms and monitoring devices.
5. Describe the procedure for installing and servicing steps.

SECTION SIX: ..... MECHANICAL AND TOWING SYSTEMS ..... 42 HOURS

A. Tow Vehicle. ..... 6 Hours

Outcome: ***Wire a vehicle for towing.***

1. Describe the requirements and procedure for installing wiring trailer connections on a tow vehicle.
2. Describe the operation, application and installation of charging system isolators and relays.

B. Hitch Systems ..... 12 Hours

Outcome: ***Install hitch and tow systems.***

1. Describe the types and application of hitch and tow systems.
2. Describe the procedure for installing and adjusting hitch and tow systems.
3. Describe the types and application of sway control devices.
4. Describe the purpose and requirements for safety chains.
5. Describe methods, regulations and applications for dinghy towing.

C. Brake Systems ..... 12 Hours

Outcome: ***Service brake systems and components.***

1. Describe the components and operation of brake systems.
2. Describe the procedure for installing a tow vehicle brake control system.
3. Service brake systems and components.

D. Undercarriage.....12 Hours

Outcome: ***Service trailer frames, undercarriage and components.***

1. Describe the purpose of undercarriage components.
2. Describe the construction of trailer frames.
3. Describe axle types, suspension systems and weight ratings.
4. Describe the procedure for aligning an axle.
5. Describe wheel and tire types and ratings.
6. Describe tire wear patterns and causes.
7. Describe types of landing gear and trailer tongue jacks.
8. Describe the procedure for servicing landing gear and trailer tongue jacks.
9. Perform wheel and tire balance.
10. Service wheel bearings and seals.

SECOND PERIOD TECHNICAL TRAINING
RECREATION VEHICLE SERVICE TECHNICIAN TRADE
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE: STANDARD PRACTICES AND PROCEDURES ..... 24 HOURS

A. **Work Orders ..... 4 Hours**

Outcome: ***Prepare a work order.***

1. Describe purpose and types of work orders.
2. Describe procedure for documenting parts, labour and shop supplies.

B. **Estimating ..... 10 Hours**

Outcome: ***Perform an estimate.***

1. Describe the purpose and types of estimates.
2. Describe estimating policies and procedures.
3. Perform an estimate.

C. **Warranty and Recall Procedures ..... 2 Hours**

Outcome: ***Apply warranty policies, recalls and service bulletins.***

1. Describe warranty policies and procedures.
2. Describe the procedure for processing recalls and service bulletins.

D. **Parts Catalogues and Related References ..... 4 Hours**

Outcome: ***Use parts catalogues and related references.***

1. Describe the purpose and types of parts catalogues and related references.
2. Describe the procedure for using parts catalogues and related references.

E. **Customer Relations ..... 4 Hours**

Outcome: ***Conduct business in a way that will build customer relations and present a professional image.***

1. Describe how to provide courtesy to a customer and project a professional image.
2. Identify how to address customer needs and expectations.
3. Describe expectations for professional conduct during customer communications.

SECTION TWO: ALTERNATING CURRENT (ac) ELECTRICAL SYSTEMS ..... 54 HOURS

A. **AC Electrical System Service ..... 24 Hours**

Outcome: ***Service ac electrical systems and components.***

1. Describe the difference between ac and dc circuits.
2. Describe safety precautions used when servicing ac electrical systems.

3. Describe the purpose and operation of ac circuit components.
4. Describe the purpose and operation of Energy Management Systems.
5. Describe codes for ac electrical systems.
6. Test ac circuits and protection devices.

B. Generators ..... 20 Hours

Outcome: ***Service generators.***

1. Describe safety hazards associated with generators.
2. Calculate output requirements for generators.
3. Describe the procedure for installing generators.
4. Describe codes for generator systems.
5. Describe the procedure for servicing generators.
6. Test generator output.

C. Converters and Charging Systems ..... 10 Hours

Outcome: ***Service converters, power centers and charging systems.***

1. Describe types of converters and charging systems.
2. Describe the operation of converters and charging systems.
3. Describe the operation of power centers.
4. Describe the procedure for servicing converters, power centers and charging systems.
5. Calculate convertor requirements.

SECTION THREE: ..... CONSUMER PRODUCTS ..... 24 HOURS

A. Consumer Media Products ..... 24 Hours

Outcome: ***Service consumer media products.***

1. Describe the types of consumer media products.
2. Describe the general operation and set up procedures for common consumer products.
3. Describe the procedure for installing and servicing entertainment systems.
4. Describe the procedure for installing and servicing antennae and satellite systems.

SECTION FOUR: ..... APPLIANCES ..... 53 HOURS

A. Cooking Equipment ..... 5 Hours

Outcome: ***Service cooking equipment.***

1. Describe the types of cooking equipment.
2. Describe the purpose and operation of cooking equipment components.
3. Describe codes relating to cooking equipment.
4. Describe the procedure for servicing cooking equipment.

B. **Water Heating Systems** ..... **13 Hours**

Outcome: ***Service water heating systems and components.***

1. Describe the types of water heating systems.
2. Describe the purpose and operation of water heating system components.
3. Describe codes for water heating systems.
4. Service water heating systems.

C. **Heating Systems** ..... **35 Hours**

Outcome: ***Service heating systems.***

1. Describe the types and operation of heating systems.
2. Describe the purpose and operation of heating systems components.
3. Describe the types and operation of thermostats and climate controls.
4. Describe codes for heating systems.
5. Describe the procedure for servicing heating systems.

SECTION FIVE: ..... EXTERIOR STRUCTURES ..... 61 HOURS

A. **Exterior Surfaces, Components and Structures** ..... **41 Hours**

Outcome: ***Service exterior surfaces, components and structures.***

1. Describe framing and insulating methods, materials and design.
2. Describe the types of exterior finishes.
3. Describe the procedure for servicing framing.
4. Describe the procedure for servicing exterior components.
5. Describe the procedure for replacing fiber reinforced plastic (FRP).
6. Describe the types of material used in windows.
7. Describe the types of roof construction.
8. Describe the procedure for servicing roofing systems.
9. Describe the procedure for preparing units for cold weather use.
10. Describe the design and construction of slide-out rooms.
11. Describe the procedure for servicing interior walls, ceiling coverings and panels.
12. Identify codes relating to the servicing of exterior structures.
13. Replace metal siding.
14. Service structural and exterior components.

B. **Body Panels** ..... **15 Hours**

Outcome: ***Prepare body panels for repair.***

1. Describe the composition of body panels and components.
2. Describe the procedure for servicing FRP, fibre glass panels and components.
3. Describe the procedure for servicing plastic components.
4. Describe the procedure for installing and replacing decals and graphics.

C. **Camper Tie-Downs and Jacks** ..... **5 Hours**

Outcome: ***Service camper tie down systems and jacks.***

1. Describe the types and capacities of tie down systems.
2. Describe the types and capacities of camper jacks.
3. Describe the procedure for installing and servicing camper jacks.
4. Describe the procedure for installing and servicing tie down systems.

SECTION SIX:..... MECHANICAL AND SUSPENSION SYSTEMS ..... 24 HOURS

A. **Suspension Aids** ..... **16 Hours**

Outcome: ***Service suspension aids.***

1. Describe trailer frame types and features.
2. Describe types of suspension systems.
3. Describe the effect of add-on suspension aids.
4. Describe the effect of vehicle modifications on suspension operation.
5. Describe the procedure for installing suspension aids.
6. Describe the procedure for adjusting suspension aids.
7. Describe the procedure for servicing suspension aids.

B. **Lift and Wall System** ..... **8 Hours**

Outcome: ***Service lift and wall systems.***

1. Describe the types of lift systems.
2. Describe the operation of lift systems.
3. Describe the servicing of lift systems.
4. Describe the procedure for servicing wall systems.

THIRD PERIOD TECHNICAL TRAINING
RECREATION VEHICLE SERVICE TECHNICIAN TRADE
COURSE OUTLINE

UPON SUCCESSFUL COMPLETION OF THIS PROGRAM THE APPRENTICE SHOULD BE ABLE TO PERFORM THE FOLLOWING OUTCOMES AND OBJECTIVES.

SECTION ONE: INVERTER AND SOLAR SYSTEMS ..... 30 HOURS

A. Solar Systems ..... 15 Hours

Outcome: ***Service solar systems and components.***

1. Describe the purpose of solar charging system components.
2. Describe the operation and application of solar charging systems.
3. Describe the procedure for installing solar charging systems.
4. Size a solar charging and battery system to meet customer requirements.
5. Describe the procedure for expanding a solar charging system to match higher requirements.
6. Describe the procedure for servicing a solar charging system.

B. Inverter Systems ..... 15 Hours

Outcome: ***Service inverter systems.***

1. Describe the purpose and operation of an inverter system.
2. Describe types of inverters and remote control panels.
3. Describe the procedure for installing an inverter system.
4. Calculate power draws, battery requirements, cable sizes and load protection devices.
5. Describe the procedure for servicing inverter systems.

SECTION TWO: APPLIANCES ..... 80 HOURS

A. Air Conditioners and Heat Pumps ..... 20 Hours

Outcome: ***Service air conditioners and heat pumps.***

1. Describe the types of air conditioners and heat pumps.
2. Describe the purpose of air conditioner and heat pump components.
3. Describe types and operation of thermostats and climate controls.
4. Describe the procedure for servicing air conditioners and heat pump systems.
5. Describe the procedure for disposing, reclaiming and recycling refrigerants.
6. Describe codes for air conditioners and heat pumps.

B. **Refrigerators** ..... **35 Hours**

Outcome: ***Service refrigerators.***

1. Describe the types and operation of refrigerators.
2. Describe the purpose of refrigerator components.
3. Describe the procedure for servicing refrigerators.
4. Describe codes related to refrigerators.
5. Service refrigerators.

C. **Appliance Products** ..... **10 Hours**

Outcome: ***Install appliances and consumer products.***

1. Describe types of appliance and consumer products.
2. Describe the procedure for servicing appliances and consumer products.
3. Describe the procedure for installing appliance and consumer products.

D. **Electronic Control Systems** ..... **15 Hours**

Outcome: ***Service electronic control systems.***

1. Describe the operation of electronic components.
2. Describe precautions required for handling electronics.
3. Service the wiring connection to an electronic component.
4. Describe common faults in electronic components.
5. Test electronic components.

SECTION THREE: ..... INTERIOR STRUCTURES AND COMPONENTS ..... 30 HOURS

A. **Cabinets, Furnishings and Flooring** ..... **30 Hours**

Outcome: ***Service cabinets, furnishings and flooring.***

1. Describe the types of material used in counter top construction.
2. Describe the procedure for servicing countertops.
3. Describe the types of materials used in cabinet construction.
4. Describe the procedure for servicing cabinet structures.
5. Describe the procedure for servicing cabinet trim, doors and hardware.
6. Describe the procedure for servicing drawers and hardware.
7. Describe the procedure for servicing upholstery components.
8. Describe the procedure for servicing window coverings, blinds and valances.
9. Describe the procedure for servicing floor coverings.
10. Service interior components.

SECTION FOUR: ..... SLIDE OUTS AND LEVELLING SYSTEMS..... 50 HOURS

A. Hydraulic Systems ..... 15 Hours

Outcome: ***Service hydraulic systems and components.***

1. Describe the function of hydraulic system components.
2. Describe hydraulic system operation, applications and testing.
3. Describe the procedure for servicing hydraulic system components.
4. Describe the procedure for adjusting hydraulic systems.
5. Describe safety procedures relating to hydraulic systems.
6. Test a hydraulic system.

B. Slide Out Systems ..... 20 Hours

Outcome: ***Service slide out systems and components.***

1. Describe the purpose of slide out system components.
2. Describe the operation of slide out systems.
3. Describe the procedure for servicing slide out systems.
4. Describe procedure for adjusting, removing and replacing slide out rooms.

C. Levelling Systems ..... 15 Hours

Outcome: ***Service levelling systems and components.***

1. Describe the purpose of levelling systems.
2. Describe types of levelling systems.
3. Describe the purpose of levelling system components.
4. Describe the operation of levelling systems.
5. Describe the procedure for installing levelling systems.
6. Describe the procedure for servicing levelling systems.

SECTION FIVE: .....AUXILIARY FUELING SYSTEMS AND SPECIALTY HAULERS ..... 25 HOURS

A. Auxiliary Fueling Systems ..... 15 Hours

Outcome: ***Service auxiliary fuel systems.***

1. Describe the properties of gasoline and diesel fuel.
2. Describe auxiliary fuel system components.
3. Describe the procedure for handling fuel.
4. Describe the procedure for dispensing fuel.
5. Identify codes for auxiliary fuel systems.

B. Specialty Haulers ..... 10 Hours

Outcome: ***Service specialty haulers.***

1. Describe the purpose of speciality hauler components.
2. Describe the operation of specialty hauler components.

3. Describe the types of materials used in constructing speciality haulers.
4. Describe the design and ventilation requirements.
5. Describe codes and safety procedures relating to the servicing of speciality haulers.

SECTION SIX:..... WELDING, COACHING, CERTIFICATION AND COMMITTEES ..... 25 HOURS

A. Gas Metal Arc Welding (GMAW) ..... 15 Hours

Outcome: ***Perform GMAW welding operations***

1. Describe the welding operations permitted within the scope of this trade.
2. Describe the function of GMAW components of GMAW equipment.
3. Describe the operation of GMAW equipment.
4. Describe troubleshooting of GMAW equipment.
5. Demonstrate material preparation.
6. Perform the sequence of start-up and shut down of GMAW equipment.
7. Perform tack welds using GMAW.

B. Workplace Coaching Skills ..... 4 Hours

Outcome: ***Display coaching skills.***

1. Describe coaching skills used for training apprentices.

C. Alberta's Industry Network ..... 2 Hours

Outcome: ***Describe the role of the Alberta Apprenticeship and Industry Training Board and the network of industry committees that represent the trades and occupations in Alberta.***

1. Describe Alberta's apprenticeship and industry training system.
2. Describe the roles and responsibilities of the Alberta Apprenticeship and Industry Training Board, government and post-secondary institutions.
3. Describe the roles and responsibilities of the PACs, LACs and occupational committees.

D. Interprovincial Standards Red Seal Program ..... 4 Hours

Outcome: ***Use Red Seal products to challenge an Interprovincial exam.***

1. Identify Red Seal products used to develop Interprovincial examinations.
2. Use Red Seal products to prepare for an Interprovincial examination.

Apprenticeship and Industry Training

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